

# इंटरनेट

# मानक

## Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 6207 (1971): Trolleys for Oxygen Cylinders [MHD 13:  
Veterinary Hospital Planning and Surgical Instruments]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



**IS : 6207 - 1971**

*Indian Standard*

**SPECIFICATION FOR  
TROLLEYS FOR OXYGEN CYLINDERS**

**( Second Reprint MAY 1993 )**

**UDC 615'478'35 : 621'642'02**

**© Copyright 1972**

**BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002**

# Indian Standard

## SPECIFICATION FOR TROLLEYS FOR OXYGEN CYLINDERS

---

Anaesthesia, Resuscitation and Allied Equipment Sectional  
Committee, CPDC 13

<i>Chairman</i>	<i>Representing</i>
DR B. L. BHATTACHARJEE	Directorate General of Health Services, New Delhi
<i>Members</i>	
SHRI BALESHWAR SAHAI BHARGAVA	Khushwaqat Industries, Rewari (Haryana)
SHRI SATISHWAR SAHAI BHARGAVA (Alternate)	
DR A. K. BOSE	Institute of Post Graduate Medical Education & Research, Calcutta
SHRI H. GHOSH	Indian Oxygen Ltd, Calcutta
SHRI A. N. MUKERJI (Alternate)	
SHRI V. KRISHNAMOORTHY	Directorate General of Technical Development, New Delhi
SHRI H. C. MUKHERJEE	Ministry of Defence (DGI)
DR V. RAJAGOPALAN	Health and Family Planning Department, Government of Tamil Nadu, Madras
BRIG K. R. RAMA RAO	Military Hospital [Ministry of Defence (DGAFMS)], New Delhi
DR N. P. SINGH	Jawaharlal Institute of Post Graduate Medical Education & Research, Pondicherry
SHRI A. B. RAO, Director (Consr Prod)	Director General, ISI (Ex-officio Member)

*Secretary*  
SHRI D. K. AGARWAL  
Assistant Director (Consr Prod), ISI

Anaesthesia and Oxygen Therapy Equipment Subcommittee, CPDC 13 : 1

<i>Convener</i>	
SHRI H. GHOSH	Indian Oxygen Ltd, Calcutta
<i>Members</i>	
SHRI A. N. MUKERJI (Alternate to Shri H. Ghosh)	
SHRI BALESHWAR SAHAI BHARGAVA	Khushwaqat Industries, Rewari (Haryana)
SHRI P. S. BHARGAVA (Alternate)	
DR B. L. BHATTACHARJEE	Directorate General of Health Services, New Delhi
BRIG K. R. RAMA RAO	Military Hospital [Ministry of Defence (DGAFMS)], New Delhi
DR S. S. VERMA	Railway Board (Ministry of Railways)
DR K. B. SUNDERAM (Alternate)	
SHRI D. N. VIG	ULTRADENT Private Ltd, Bombay
SHRI R. N. VIG (Alternate)	

---

BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# *Indian Standard*

## SPECIFICATION FOR TROLLEYS FOR OXYGEN CYLINDERS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 15 June 1971, after the draft finalized by the Anaesthesia, Resuscitation and Allied Equipment Sectional Committee had been approved by the Consumer Products Division Council.

**0.2** This standard has been formulated at the instance of the Advisory Committee for Development of Surgical Instruments, Equipment and Appliances, Government of India.

**0.3** In the preparation of this standard, assistance has been derived from the following standards issued by the British Standards Institution:

BS 2050 : 1961 Specification for electrical resistance of conductive and anti-static products made from flexible polymeric material.

BS 2718 : 1967 Specification for gas cylinder trolleys for use in hospitals.

**0.4** This standard is one of a series of Indian Standards on diagnostic and anaesthetic equipment. Other standards published so far in the series are given on page 10.

**0.5** This standard contains clauses which call for agreement between the purchaser and the supplier. The relevant clauses are **6.2**, **9.1** and **10.1**.

**0.6** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

### 1. SCOPE

**1.1** This standard covers essential requirements of trolleys for oxygen cylinders for use in hospitals.

---

\*Rules for rounding off numerical values (*revised*).

## 2. SIZES

**2.1** The trolleys shall be in three sizes as follows:

*Size 1* — for cylinders of 14·0 cm nominal diameter,

*Size 2* — for cylinders of 18·0 cm nominal diameter, and

*Size 3* — for cylinders of 23·0 cm nominal diameter.

## 3. MATERIAL

**3.1 Framework** — The framework shall be made from electric resistance butt-welded steel tube ( ERW ) conforming to IS : 2039-1964\*. The tube for Size 1 shall be of 19·0 mm outside diameter and 1·22 mm thickness. The tube for Sizes 2 and 3 shall be of 25·4 mm outside diameter and 1·63 mm thickness.

## 4. NOMENCLATURE

**4.1** For the purpose of this standard, the nomenclature as given in Fig. 1 shall apply.

## 5. CONSTRUCTION

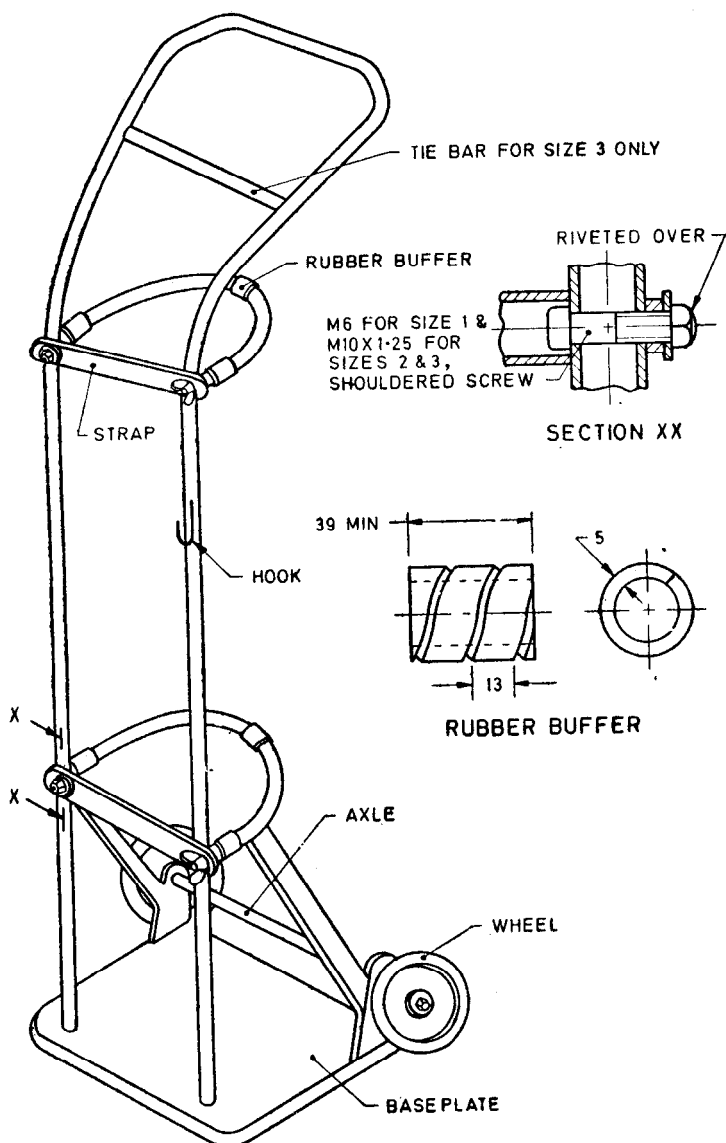
**5.1 Framework** — The main framework comprising a tube bent to the required shape shall be welded to a baseplate in front, the assembly being mounted on two wheels. Support for the cylinder shall be provided near the top and the bottom of the trolley by U-shaped supports welded to the uprights. The back of the lower U-shaped support shall be secured to the baseplate. The axle shall be rigidly supported. The upper portion of the Size 3 trolley shall be strengthened by a tie-bar across the handle portion.

**5.1.1** The cylinder shall rest in the U-shaped supports on rubber buffers. There shall be 5 to 10 mm annular clearance, based on the outer diameter of cylinder, between the cylinder and the support tubes less the thickness of the rubber buffers.

**5.2 Baseplate** — The baseplate shall have the following dimensions:

Size	<i>Dimensions of Baseplate in mm, Min</i>		
	Width	Length	Thickness
1	230	180	3·15
2	275	205	5·0
3	300	230	5·0

\*Specification for steel tubes for bicycle and allied purposes.



All dimensions in millimetres.

FIG. 1 TROLLEY, OXYGEN CYLINDER, TYPICAL



**5.2.1** The baseplate shall have four metallic shoes at the bottom.

**5.3 Fixing Straps** — A fixing strap or straps 25 × 5 mm nominal section shall be provided to retain the cylinder in the trolley, each strap being hinged at one end and secured by a non-detachable wing nut at the other. When two are provided, the lower fixing strap shall be so arranged that when it is allowed to fall into the vertical position, it will be clear of the ground. The strap or straps shall allow the trolley to be tilted 90° from the vertical in any direction without releasing the cylinder.

**5.3.1** The attachment studs and wing nut shall be 6 mm indiameter for Size 1 and 10 mm for Sizes 2 and 3 ( *see* Fig. 1 ).

**5.4 Wheels** — The wheels for Size 1 trolley shall be 100 mm in diameter with a width of tread not less than 20 mm and for Sizes 2 and 3, 225 mm in diameter with a width of tread not less than 25 mm. The axles shall be 12 mm and 16 mm in diameter respectively. Wheels shall not project more than 100 mm on either side of the frame.

**5.5 Buffers** — Each cylinder support shall be fitted with at least three rubber buffers as shown in Fig. 1 to prevent the cylinder from rattling. More buffers may be provided if desired. A rubber tube may also be used as an alternative.

**5.6** A device to hold the cylinder key shall be provided.

## 6. WORKMANSHIP AND FINISH

**6.1** All welded joints shall be fully penetrated. The welds shall be sound in every detail and shall be finished flush. In the finished stage, there shall be no exposed sharp edges or other unsealed formations which may harbour dirt or foreign matter.

**6.2** The framework shall be painted white, off-white or sea-green as required by the purchaser. Prior to painting, all the parts shall be degreased, rust-proofed by phosphating and then suitably protected by an anticorrosive primer, either by brushing or by spraying, and then finished by spraying in stoving enamel or air-drying enamel of the specified shade. The primer and the enamel paint shall conform to the relevant Indian Standard specifications ( *see* IS : 150-1950\*, IS : 151-1950†, IS : 2074-1962‡ and IS : 2075-1962§ ). In every instance, each coat shall be separately stoved or air-dried as the case may be. The resulting finish shall be hard and shall not readily chip or flake.

\*Specification for ready mixed paint, brushing, finishing, stoving, enamel, colour as required.

†Specification for ready mixed paint, spraying, finishing, stoving, enamel, for general purposes, colour as required.

‡Specification for ready mixed paint, red oxide-zinc chrome, priming.

§Specification for ready mixed paint, stoving, red oxide-zinc chrome, priming.

**6.3** The under surface of the baseplate shall be finished with a conductive metallic coating. On the top surface of the baseplate an area with a minimum diameter of 130 mm, 180 mm and 200 mm for Sizes 1, 2 and 3 respectively shall also be finished with a conductive metallic coating.

## **7. REQUIREMENTS**

**7.1** The trolleys shall be so designed that when loaded the centre of gravity lies vertically above the axles when the trolley is at the correct angle for pushing.

**7.2** The overall heights of the trolleys shall be not less than 100 cm nor more than 110 cm.

**7.3** The axles shall be so placed that when the trolley is at rest the wheels are raised not less than 3 mm nor more than 6 mm off the floor.

**7.4** The wheels shall have smooth movement.

**7.5** The tyres shall be of antistatic composition and these shall not permanently colour mark or stain the floor. The maximum electrical resistance of the tyres shall be  $10^4$  ohms when measured by the method given in Appendix A.

**7.6** The buffers shall be of antistatic rubber composition. The maximum electrical resistance of the buffers shall be  $10^6$  ohms when measured by the method given in Appendix A.

## **8. MARKING**

**8.1** The trolleys shall be marked with the manufacturer's name, initials or recognized trade-mark, and shall also have the cylinder diameter stencilled in 12-mm letters on the top strap.

**8.2** The wheels and tyres shall be conspicuously and indelibly marked to indicate that they are antistatic. The marking shall be as follows:

- a) The exposed parts of the wheel centres shall be stove enamelled in yellow similar to Indian Standard colour No. 355 'Lemon' (see IS : 5-1961\*).
- b) The tyres shall be marked with an indelible indicator in yellow similar to Indian Standard colour No. 355 'Lemon' (see IS : 5-1961\*).

---

\*Colours for ready mixed paints (second revision).

**8.3** The buffers shall be clearly and indelibly marked with the yellow spot to indicate that they are antistatic. The colour shall be similar to Indian Standard colour No. 355 'Lemon' ( *see* IS : 5-1961\* ).

**8.4** The trolleys may also be marked with the ISI Certification Mark.

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

## 9. ACCESSORY FITTINGS

**9.1** If required by the purchaser the trolleys shall be provided with a Wolff's bottle cage either permanently fixed to the trolley or provided with a pigot and socket method of attachment.

## 10. PACKING

**10.1** The trolleys shall be packed as agreed to between the purchaser and the supplier.

# APPENDIX A

( *Clauses 7.5 and 7.6* )

## MEASUREMENT OF ELECTRICAL RESISTANCE OF TYRES AND BUFFERS

### A-1. PREPARATION OF SAMPLE

**A-1.1** The tyre or buffer to be tested shall be strained once and then maintained in the unstrained state at a temperature between 20°C and 30°C for a period of not less than 24 hours. The strain shall be of the same order as the maximum to which the component is likely to be subjected during normal use. Then the component shall be stored for not less than 2 hours at a temperature of  $27 \pm 2^\circ\text{C}$  in air with relative humidity of less than 65 percent. The surfaces which are to be used in the test shall then be cleaned immediately by rubbing with dry fullers

---

\*Colours for ready mixed paints ( *second revision* ).

earth using a clean pad of cotton wool, care being taken to avoid straining the material. After all traces of the powder have been cleaned away, the surfaces shall be wiped with a pad moistened with distilled water and rubbed dry with a clean cloth.

## A-2. TESTING INSTRUMENT

**A-2.1** The test shall be carried out with an insulation tester having a nominal open circuit voltage of 500 V dc or with any other suitable instrument known to give comparable results. The instrument shall be sufficiently accurate to determine the resistance within 5 percent and shall not dissipate more than 3 W in the specimen. The voltage shall be applied for no longer than is necessary to carry out the test in order to reduce the risk of overheating the test piece.

## A-3. LIQUID ELECTRODE AND METAL CONTACT

**A-3.1** Liquid electrode shall be formed on the surface by means of a conducting liquid having the following composition:

Anhydrous polyethylene glycol of mol wt 600	800 parts
Water	200 parts
Soft soap	1 part
Potassium chloride	10 parts

The electrode area shall be completely wetted and shall remain so till the end of the test. Clean metal contacts shall be applied to the wetted area so that the contact area is approximately of the same size but not greater than the wetted area. The surface of the component shall not be deformed either during the application of the contact or during the test.

## A-4. PROCEDURE

**A-4.1** Immediately after the preparation of the article for test in accordance with **A-1.1**, liquid electrode and metal contact as specified in **A-3** shall be applied. It shall then be kept at a temperature of  $27 \pm 2^\circ\text{C}$  at a relative humidity of less than 65 percent and the test as specified in **A-4.2** or **A-4.3** shall be carried out after a period of not less than 15 minutes nor more than 2 hours.

**A-4.2 Tyres** — The liquid electrode shall be applied to an area approximately 25 mm on the working surface of the tyre; the area shall not extend beyond this surface towards the metal part. The metal contact shall then be applied to the wetted area and the resistance from this contact to the bonded or clamped metal measured.

**A-4.2.1** Alternatively, the test may be carried out by placing the tyre on an insulated wet metal plate and measuring the resistance between the plate and the hub of the wheel.

**A-4.3 Buffers** — Liquid electrode shall be applied to the normal contact surfaces so that the resistance through the buffer is measured. The dimensions of the coatings shall be as large as practicable but shall not extend beyond the contacting areas and shall not exceed 25 mm<sup>2</sup>. The metal contact shall be applied to the wetted areas and the resistance measured.

AMENDMENT NO. 1 NOVEMBER 1985

TO

IS:6207-1971 SPECIFICATION FOR TROLLEYS  
FOR OXYGEN CYLINDERS

(Page 5, clause 5.6) - Add the following new  
clause after 5.6:

'5.7 A tolerance of  $\pm 2.5$  percent shall be allowed on  
all dimensions except otherwise specified provided the  
fitting of the cylinder is not affected.'

(CPDC 13)

---

Printed at Simco Printing Press, Delhi, India